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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/714,536
Filing Date: November 13, 2003
Appellant(s): BREDERLOW, RALF

Laura C. Brutman
DICKSTEIN SHAPIRO LLP
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 21 September 2006 appealing from the Office action mailed 26 May 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,150,668	Bao et al	11-2000
6,720,572	Jackson et al	04-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 13-17 and 19-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Bao et al** (USPN 6,150,668).

Regarding claims 13 and 24, **Bao et al** discloses a polymer transistor arrangement and a method of forming said arrangement, comprising:

forming a polymer transistor in and/or on a substrate **205** including:

forming a first source/drain region **225**;

forming a second source/drain region **226**;

forming a channel region **230** between the first and second source/drain regions **225** and **226**;

forming a gate region **215**; and

forming a gate insulating layer **220** between the channel region **230** and the gate region **215**; and

forming a drive circuit [see col. 9, lines 33-34].

Bao et al does not specifically mention providing voltages such that the polymer transistor has properties similar or identical to those of a Schottky diode. However, this is merely an intended use of the structure as taught by **Bao et al**. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). It would have been obvious to one of ordinary skill in the art at the time of invention to

apply external stimuli such as voltages in any manner as best befits the application for which the structure is intended.

Regarding claim 14, **Bao et al** disclose the arrangement of claim 13 as described above. That the drive circuit provides the source/drain region and the gate region with electrical potentials such that the junction between one of the two source/drain regions and the channel region is connected as a reverse-bias diode is merely an intended use, and therefore anticipated by **Bao et al** as the structure of **Bao et al** may be used in this manner.

Regarding claim 15, **Bao et al** disclose the arrangement of claim 13 as described above, wherein the channel region **230** and the source/drain regions **225** and **226** are produced from a material such that the junction between one of the source/drain regions **225** or **226** and the channel region **230** is a Schottky junction [see paragraph bridging cols. 6 and 7]. It is admitted in the instant specification that:

> A Schottky diode is a diode which, instead of a pn junction, uses a metal-semiconductor contact or a metal-polymer contact, the metal having a different work function that the other material that it is contact connected [see instant specification, page 4, lines 4-6].

Therefore, the structure of **Bao et al** must function in the same way.

Regarding claim 16, **Bao et al** disclose the arrangement of claim 13 as described above. As with claim 17, that the drive circuit provides electrical potentials such that the magnitude of the gate voltage is greater than the magnitude of the voltage between the source/drain regions is merely an intended use, and therefore anticipated by **Bao et al** as the structure of **Bao et al** may be used in this manner.

Regarding claim 17, **Bao et al** disclose the arrangement of claim 13 as described above, wherein the junctions between respective ones of the source/drain regions **225** and **226** are formed geometrically asymmetrically with respect to one another [see Figs. 2 and 3].

Regarding claims 19-23, **Bao et al** disclose the arrangement of claim 13 as described above. The limitations of claims 19-23 are merely intended use, and therefore are anticipated by **Bao et al** as the structure of **Bao et al** as disclosed may be used in an integrated circuit device, as a reference voltage circuit, a temperature-compensated reference voltage circuit, a current source or a voltage control circuit.

Claims 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Jackson et al** (USPN 6,720,572).

Regarding claims 13 and 24, **Jackson et al** disclose a polymer transistor arrangement and a method of forming said arrangement, comprising:

a polymer transistor formed in and/or on a substrate **10** including:

forming a first source/drain region **18**;

forming a second source/drain region **24**;

forming a channel region **20, 22** between the first and second source/drain regions **18** and **24**;

forming a gate region **14**; and

forming a gate insulating layer **16** between the channel region **20, 22** and the gate region **14**; and

forming a drive circuit [see Fig. 2; see also col. 3, lines 45-48].

Jackson et al does not specifically mention providing voltages such that the polymer transistor has properties similar or identical to those of a Schottky diode. However, this is merely an intended use of the structure as taught by **Jackson et al**. It has been held that a claim containing a "recitation with respect to the manner in which a claimed apparatus is intended to be employed does

not differentiate the claimed apparatus from a prior art apparatus" if the prior art apparatus teaches all the structural limitations of the claim. *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987). It would have been obvious to one of ordinary skill in the art at the time of invention to apply external stimuli such as voltages in any manner as best befits the application for which the structure is intended.

Regarding claim 14, **Jackson et al** disclose the arrangement of claim 13 as described above. That the drive circuit provides the source/drain region and the gate region with electrical potentials such that the junction between one of the two source/drain regions and the channel region is connected as a reverse-bias diode is merely an intended use, and therefore anticipated by **Jackson et al** as the structure of **Jackson et al** may be used in this manner.

Regarding claim 15, **Jackson et al** disclose the arrangement of claim 13 as described above, wherein the channel region **20, 22** and the source/drain regions **18** and **24** are produced from a material such that the junction between one of the source/drain regions **18** or **24** and the channel region **20, 22** is a Schottky junction. Specifically, the channel region is formed of a material such as pentacene and 8-hydroxyquinoline aluminum (Alq) and the source/drain regions are formed from palladium and aluminum [see col. 3, lines 59-64]. It is admitted in the instant specification that:

> A Schottky diode is a diode which, instead of a pn junction, uses a metal-semiconductor contact or a metal-polymer contact, the metal having a different work function that the other material that it is contact connected [see instant specification, page 4, lines 4-6].

Therefore, the structure of **Jackson et al** must function in the same way.

Regarding claim 16, **Jackson et al** disclose the arrangement of claim 13 as described above. As with claim 17, that the drive circuit provides electrical potentials such that the magnitude of the gate voltage is greater than the magnitude of the voltage between the source/drain regions is merely

an intended use, and therefore anticipated by **Jackson et al** as the structure of **Jackson et al** may be used in this manner.

Regarding claim 17, **Jackson et al** disclose the arrangement of claim 13 as described above, wherein the junctions between the respective ones of the source/drain regions **18** and **24** and the channel region **20, 22** are formed geometrically asymmetrically with respect to one another [see Fig. 1].

Regarding claim 18, **Jackson et al** disclose the arrangement of claim 13 as described above, wherein one of the source/drain regions **24** is formed at least partially on the channel region **20, 22** and the other source/drain region **18** is formed at least partially below the channel region **20, 22** [see Fig. 1].

Regarding claims 19-23, **Jackson et al** disclose the arrangement of claim 13 as described above. The limitations of claims 19-23 are merely intended use, and therefore are anticipated by **Jackson et al** as the structure of **Jackson et al** as disclosed may be used in an integrated circuit device, as a reference voltage circuit, a temperature-compensated reference voltage circuit, a current source or a voltage control circuit.

(10) Response to Argument

With respect to the rejection under 35 U.S.C. 103(a) over **Bao et al** (USPN 6,150,668) of claims 13-17 and 19-24, Appellant argues that **Bao et al** do not disclose (or suggest) a drive circuit set up to provide the first source/drain region with a voltage of sufficiently large magnitude and the gate region with sufficiently small magnitude, such that the polymer transistor has properties similar or identical to those of a Schottky diode. The Examiner grants that the limitations wherein the voltages are applied to the drive circuit in the manner claimed are not disclosed in **Bao et al**;

however, the Examiner maintains that the limitations are nonetheless anticipated. **Bao et al** disclose, as cited previously, that "Systems with the device of the present invention will also include appropriate drive circuitry" [see col. 9, lines 33-34], which would include the drive circuit as claimed. The method of applying the voltages such that the drive circuit operates as claimed is covered under the general term "appropriate drive circuitry," as the limitations regarding the application of voltages comprise method limitations within an apparatus claim. The Appellant further argues that the "drive circuit..." limitation should be accorded patentable weight. The Examiner contends that the existence of the drive circuit has been duly considered; however, it is a product-by-process limitation. The limitation as claimed is merely a result of ordinary operation of the drive circuitry as disclosed by **Bao et al**; the specifics of the operation (i.e., the specific application of voltages) are rendered obvious as taught by *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987), cited above. The Examiner maintains that the structure is known and taught by **Bao et al**, and the application of external stimuli, particularly in the absence of unexpected results, is not sufficient to render the claim patentable.

With respect to the rejection under 35 U.S.C. 103(a) over **Jackson et al** (USPN 6,150,668) of claims 13-24, Appellant argues that **Jackson et al** do not disclose (or suggest) a drive circuit set up to provide the first source/drain region with a voltage of sufficiently large magnitude and the gate region with sufficiently small magnitude, such that the polymer transistor has properties similar or identical to those of a Schottky diode. The Examiner grants that the limitations wherein the voltages are applied to the drive circuit in the manner claimed are not disclosed in **Jackson et al**; however, the Examiner maintains that the limitations are nonetheless anticipated. **Jackson et al** disclose voltages applied, as in the cited passage [see Fig. 2, see also col. 3, lines 45-58]. The instant claims do not patentably distinguish over the drive circuitry of **Jackson et al**, as the limitations

regarding the application of voltages comprise method limitations within an apparatus claim. The Appellant further argues that the "drive circuit..." limitation should be accorded patentable weight. The Examiner contends that the existence of the drive circuit has been duly considered; however, it is a product-by-process limitation. The limitation as claimed is merely a result of ordinary operation of known drive circuitry; the specifics of the operation (i.e., the specific application of voltages) are rendered obvious as taught by *Ex parte Masham*, 2 USPQ2d 1647 (Bd. Pat. App. & Inter. 1987), cited above. The Examiner maintains that the structure is known and taught by **Jackson et al**, and the application of external stimuli, particularly in the absence of unexpected results, is not sufficient to render the claim patentable.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Colleen E. Rodgers

Assistant Examiner

18 December 2006

Conferees:

Carl Whitehead, Jr., SPE

David Blum, TQAS